

CLAIMS:

1. A method of encoding user data into codevectors (C) of an error correcting code (ECC), comprising the steps of:
- generating a first block (B) of a fixed first number (Z1) of data symbols by taking a fixed second number (Z2), being smaller than said first number (Z1), of user data symbols (U), and a fixed third number (Z3) of dummy data symbols (D), and by arranging said user data symbols (U) and said dummy data symbols (D) in a predetermined order,
 - encoding said first block (B) of data symbols using an ECC encoder (2) to obtain a codeword (E) having a fixed number of symbols, said codeword (E) comprising said first block (B) of data symbols and a second block of a fixed fourth number (Z4) of parity symbols (P), and
 - generating a codevector (C) by selecting a fifth predetermined number (Z5) of user data symbols (U2) and a sixth predetermined number (Z6) of parity symbols (P1) from said codeword (E), the sum of said fifth and sixth number being predetermined and smaller than the sum of said second and fourth number.
2. A method of decoding codevectors of an error correcting code (ECC) into user data, said codevectors (C) being encoded by a method as claimed in claim 1 and comprising a fifth predetermined number (Z5) of user data symbols (U2) and a sixth predetermined number (Z6) of parity symbols (P1), comprising the steps of:
- generating a codeword (E) comprising said fixed third number (Z3) of dummy data symbols (D), a codevector (C) and a seventh number (Z71, Z72) of filling symbols (F1, F2), arranged in a predetermined order, the sum of said third, fifth, sixth and seventh number being equal to said the sum of said first and fourth number,
 - decoding said codeword (E) using an ECC decoder (8) to obtain said user data symbols (U) embedded in said codevector (C).
3. The method as claimed in claim 2, further comprising the step of providing an erasure flag to said ECC decoder (8) before decoding said codeword (E) indicating that said codeword (E) contains filling symbols (F1, F2) to be corrected by said ECC decoder (8).

4. The method as claimed in claim 3, said erasure flag indicating the position and/or the number of said filling symbols (F1, F2) in said codeword (E) to said ECC decoder (8).

5

5. The method as claimed in claim 2, wherein the generation of said codeword (E) is controlled such that the order of said dummy data symbols (D), said codevectors (C) and said filling symbols (F1, F2) corresponds to the order of the codeword (E) encoded by the encoder (2), wherein said filling symbols (F1, F2) are arranged at positions of user data symbols (U1) and/or parity symbols (P2) of said codeword (E) encoded by said encoder (2),
10 which are not included in said codevector (C).

6. The method as claimed in claim 1 or 2, said method being used for encoding or decoding, respectively, user data to be recorded on an optical record carrier (5),
15 particularly a CD, a DVD or a DVR disc.

7. The method as claimed in claim 1 or 2, said method being used for encoding or decoding, respectively, user data to be stored on a DVR disc in a special purpose zone (SPZ) or a burst cutting area (BCA) and to be decoded by an ECC decoder used for decoding
20 codevectors (C) of a long distance codeword (LDC) or a Burst Indicator Subcode (BIS) codeword.

8. The method as claimed in claim 1 or 2, wherein said error correcting code (ECC) is a (32, 16, 17) code and said ECC encoder (2) and decoder are adapted for encoding
25 or decoding, respectively, of a (248, 216, 33) RS code or a (62, 30, 33) RS code.

9. The method as claimed in claim 2, wherein a priori known user data symbols are used by the decoder during decoding of the codeword (E).

30 10. A device for encoding user data into codevectors (C) of an error correcting code (ECC), comprising:
- means for generating a first block (B) of a fixed first number (Z1) of data symbols by taking a fixed second number (Z2), being smaller than said first number (Z1), of user data symbols

- (U), and a fixed third number (Z3) of dummy data symbols (D), and by arranging said user data symbols (U) and said dummy data symbols (D) in a predetermined order,
- an ECC encoder (2) for encoding said first block (B) of data symbols to obtain a codeword (E) having a fixed number of information symbols, said codeword (E) comprising said first block (B) of data symbols and a second block of a fixed fourth number (Z4) of s, and
- 5 - means for generating a codevector (C) by selecting a fifth predetermined number of user data symbols (U) and a sixth predetermined number of parity symbols (P) from said codeword (E), the sum of said fifth and sixth number being predetermined and smaller than the sum of said second and fourth number.
- 10 11. A device for decoding codevectors (C) of an error correcting code (ECC) into user data, said codevectors (C) being encoded by a method as claimed in claim 1 and comprising a fifth predetermined number of user data symbols (U) and a sixth predetermined number of parity symbols (P), comprising:
- 15 - means for generating a codeword (E) comprising said fixed third number (Z3) of dummy data symbols (D), a codevector (C) and a seventh number of filling symbols, arranged in a predetermined order, the sum of said third, fifth, sixth and seventh number being equal to said the sum of said first and fourth number (Z4),
- an ECC decoder for decoding said codeword (E) to obtain said user data symbols (U)
- 20 embedded in said codevector (C).
12. Information carrier, in particular optical recording medium, storing codevectors (C) of an error correcting code encoded by a method as claimed in claim 1.
- 25 13. Information carrier storing codevector (C) of an error correction code encoded by the method claimed in claim 1 for one type of information and also storing codeword (E) for another type of information.
14. Computer program product comprising program code means for performing
- 30 the steps of the method as claimed in claim 1 or 2 if said computer program runs on a computer.